

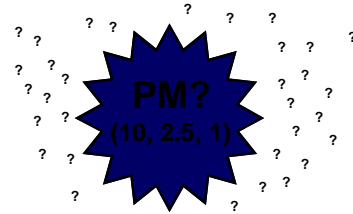
## Particulate Matter (PM) Air Pollution: An Introduction

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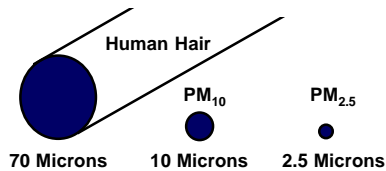


## What Is Particulate Matter Air Pollution?



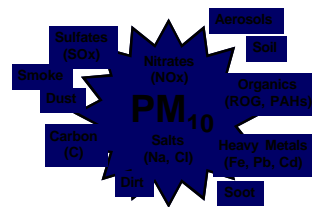
## PM Is An Air Pollutant Based On Size

- Standards in place for PM<sub>10</sub>
- PM<sub>10</sub> = particles smaller than 10 microns
- What is 10 microns? 2.5 Microns?



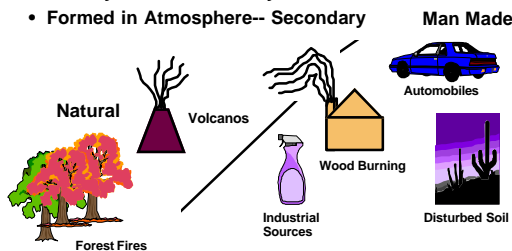
## PM Is A “Grab Bag” Of Pollutants

- A Complex Mixture
- Composition Varies
- Elements & Compounds
- Depends on Sources



## PM Air Pollution Takes Several Forms and Comes From Many Sources

- Directly Emitted-- Primary
- Formed in Atmosphere-- Secondary



## Typical Man-Made Sources of Particulate Matter

- Primary Sources
  - Fugitive Dust
    - Roads--Paved & Unpaved
    - Construction/Demolition Operations
    - Disturbed Soil--Wind Erosion
    - Agricultural Operations
  - Residential Wood Combustion
  - Prescribed Burning
    - Forest and Agricultural Burning
  - Tail Pipe Emissions

## Typical Man-Made Sources of Particulate Matter (Cont'd)

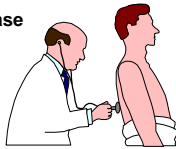
- Secondary Sources
  - Combustion Products
  - Tail Pipe Emissions
  - Industrial Sources
  - Residential Wood Combustion
  - Prescribed Burning (Ag & Forest)
  - Animal Waste--Ammonia

## We Know PM Air Pollution Causes Health Effects

- Epidemiology Studies
- Statistical Tools Look at Human Populations
- Mortality and Illness Track PM Levels
- High Degree of Consistency and Coherence Among Studies
- Effects are seen Worldwide

## What Are The Health Effects Of PM Air Pollution?

- Increases Asthma Attacks
- Reduces Lung Function
- Aggravates Bronchitis
- Results in Respiratory Disease
- Can Cause Premature Death



## Who Is Affected By PM?

- Immediately?
  - Elderly People
  - Children
  - Chronic Heart Disease Patients
  - Chronic Respiratory Disease Patients
  - People with Asthma
  - People with Bronchitis
  - Athletes
- Long Term?
  - Everyone

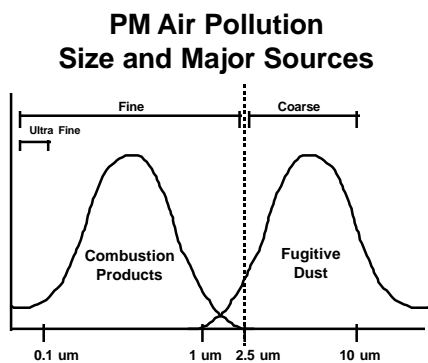
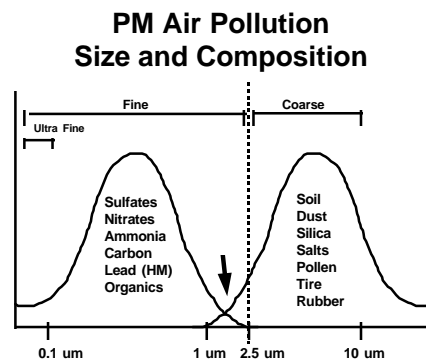
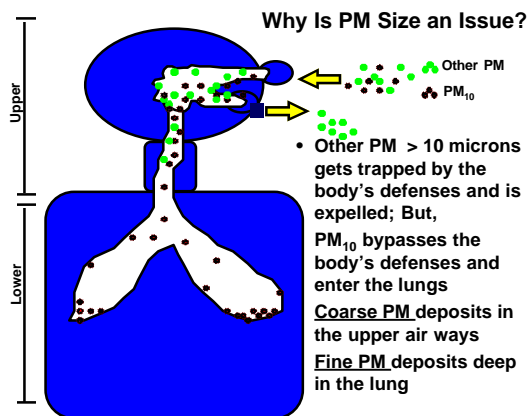


## How Bad is the Particulate Pollution Problem?

- There Are Unhealthy Levels of PM Air Pollution in Most Areas of the State
- Levels Found in 13 Out of the 14 Air Basins
- Most Californias Breathe Unhealthy Levels of PM with Some Regularity
- Already Identified Several Areas of California with Unhealthy Levels of PM<sub>2.5</sub>
- Particulate Air Pollution Routinely Reduces Visibility in Many Areas of California

## Particulate Matter Standards

- 1983 CA PM<sub>10</sub> Standard
  - 24-hr std = 50 ug/m<sup>3</sup>
  - Annual = 30 ug/m<sup>3</sup> (AGM)
- 1987 EPA PM<sub>10</sub> Standard
  - 24-hr std = 150 ug/m<sup>3</sup>
  - Annual = 50 ug/m<sup>3</sup>
- 1997 EPA PM<sub>2.5</sub> Standard Adopted
  - 24-hr std = 65 ug/m<sup>3</sup>
  - Annual = 15 ug/m<sup>3</sup> (AAM)



## Fine Particles Reduce Visibility



## Particulate Matter Is An Air Quality Concern

- Public Health Impacts
- State & Federal Standards for PM
- Knowledgeable Public
- Visibility
  - Local
  - Regional
  - Recreational Areas
  - Everyone Likes to "See" Clean Air
  - Public Perception
  - Tourism
- Economics